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ONE HUNDRED AND TWENTY CASES OF ANÆMIC AND ATROPHIC CONDITION OF THE OPTIC AND RETINA.[1]

BY ADOLF ALT, M. D.

The paper by Dr. J. L. Minor, "On the Present Standing of Tobacco Amblyopia" (see this journal, Vol. III., No. 2. page 26), has prompted me to collect all cases of atrophic conditions of the optic nerve, seen by me during a period of over five years, and of which I had notes sufficient to arrive at some definite conclusions. The following Table I. gives one hundred and twenty cases in detail:

1 The continuation of this article will appear in the September number of this journal.

TABLE NO. I.

No.	Name and Age.	Cause.	Pupils.	Ophthalmoscopic appearance.	Color perception.	Visual field.	Visual acuity.	Treatment.	Time of Observation.	Result.	One Eye.	Both Eyes.	Remarks.
1	J. G. 50.	Alcohol and tobacco.		Both discs pale; arteries thread-like; large atropinic spot in choroid R. below yellow spot.	None.	Concentric limitation L. More pronounced on nasal side in R.	R. 4/200 L. 6/200	Abstinence, iod. potass. strychn. intern.	6 weeks.	None.		1	Vision has been failing gradually for 1 1-2 years. Does not change his habits.
2	Mrs. P. 52.	Probably central lesion (tumor?)	R. larger.	Disc R. very pale; arteries thread-like; veins enlarged; perivasculitis in upper half of retina.	Normal.	Contracted considerably in up- and downwards.	R. 4/200	First strychnia subcut. Then const'nt current, and later arg. nitr.	2 months.	R. 20/50	1		Strychnia was used until signs of poisoning appeared. Patient very nervous; suffered much from headache.
3	A. R. 55.	Alcohol and tobacco.		Whitish discs.	Normal.	Central scotoma Both	20/70 Both.	Iod. pot. abstinence.	2 weeks.	None.		1	Does not change his habits.
4	C. H. W 28.	Injury to nervus opticus.		L. E. inner quadrant of disc very pale; arteries small; veins broad; some floating opacities in the vitrous.	Normal.	Upper and outer half wanting.	20/100		Seen in consultation.		1		Was shot into orbit.

5	Mrs. P. 52.	Probably central lesion. (tumor?)		Disc L. pale; veins broad, but not tortuous; arteries small.	Normal.	Normal.	20/50 ?	Constant current. Iod. pot.	4 weeks.	20/20	1		Patient died a few months later in spasms.
6	G. F. 53.	Syphilis and consequent central lesion.	Myosis, both.	L. white disc, R. whitish disc; blood vessels small.	Normal in R.	Contracted inwards and downwards.	R. 20/50 ? L=0	Arg. nitr. constant current; pot. iod. Cold douche to spine.		R. 20/50 ?		1	Had ischias 35 years ago; L. got blind 2 1-2 years ago; R. began to fail a year ago; syphilitic history; no patellar reflex; gastric crises.
7	Dr. A. S. 77.	Injury.		L. optic disc pale. Pigmentation of retina, especially in lower half.			1/∞				1		Received injury to temple 7 years ago Had severe inflammation for 2 weeks. When examined by Dr. Noyes at that time had multiple retinal hæmorrhages.
8	J. H. 36.	Alcohol and tobacco.		R. whitish disc; arteries small. L. arteries small; retinal hæmorrhage below disc.	Cannot recognize yellow; calls green blue.		R. 6/200 ? L. 20/200	Abstinence pot. iod.	4 weeks.	R. 20/70 ? L. 20/50		1	No albumen. Heart normal.
9	F. G. 33.	Tobacco.		R. disc pale; arteries small; veins broad and partially tortuous. L. disc reddish; arteries small; veins tortuous.	Cannot recognize green.	Central scotoma both.	R. 20/100 ? L. 20/200	Abstinence pot. iod.	1 year.	R. 20/30 L. 20/20 Color perception normal.		1	

TABLE NO. 1.—*Continued.*

No.	*Name and Age.*	*Cause.*	*Pupils.*	*Ophthalmoscopic appearance.*	*Color perception.*	*Visual field.*	*Visual acuity.*	*Treatment*	*Time of observation.*	*Result.*	*One Eye.*	*Both Eyes.*	*Remarks.*
10	M. B. 30.	Probably central lesion (syphilis?)	Mydriasis L.	L. arteries very small; veins broad and tortuous; disc pale on inner half.		Very much contracted inward and downwards.	L. $^{1}/_{100}$	Potass. iod.	4 weeks.	None.	1		R. perfectly normal.
11	M. Mc. 43.	Alcohol and tobacco.		Discs white; arteries and veins very thin.	Cannot recognize green.	Restricted downw'ds and. Inwards in both. Central scotoma.	R. $^{12}/_{200}$ L. $^{15}/_{200}$	Abstinence, iron.	2 months.	None.		1	Dyspepsia potat. Does not change his habits.
12	R. K. 55.	Alcohol and tobacco.		Disc pale; arteries small; veins broad in L., small in R. abnormal pigmentation of choroid.	Cannot recognize yellow; green he calls blue.	Concentrically restricted. Both.	R. $^{20}/_{70}$ L. $^{20}/_{50}$	Abstin. Pot.iod	2 months.	$^{20}/_{20}$? Both.		1	Has been a hard smoker for many years; took to drinking a few months ago; vision has been failing since.
13	J. K. 26.	Syphilis combined with alcohol and tobacco.					$^{20}/_{200}$ Both.	Pot. iod.; oleate of mercury.				1	Sent to hospital; result unknown.
14	Mrs. H.W 40.	Uterine affection Kopio-		Discs pale; arteries small; veins broad.		Contracted downwards and in-	R. $^{20}/_{70}$ L. $^{20}/_{200}$	Strychnia intern. ; brom.	2 years.	Generally improved		1	Glaucoma developed later on.

		pia hysterica.				wards; central scotoma, both. (At times scintillating.		pot.					
15	J. D. K. 49.	Tobacco.		Outer half of discs perfectly white; veins broad; arteries very thin.		R. limited downwards, L. concentrically; centr. scotoma both	20/100 ?. Both	Strychn intern.; pot. iod. abstinence.	1 1-2 years.	Blindness.		1	Kept on smoking.
16	E. L. 39.	Alcohol and tobacco, perhaps syphilis.	Mydriasis both.	White discs.				Had been treated with strychnia, pot. iod. and electricity.	7 months	None.		1	Considerable headache. Strabismus divergens.
17	G. S. 53.	Alcohol and tobacco.		Whitish discs; arteries small.		R. restricted inwards; central scotoma, both.	R. 12/200 L. 20/200	Abstinence.; pot. iodid.	6 weeks.	20/200 Both.		1	Saloon-keeper.
18	W. S. 23.	Syphilis.		Whitish discs; arteries small; veins broad.			R. 20/30 ? L. 1/200	Pot. iod.	1 month.	None.		1	Infected 3 years previously; had iritis and bone affections.

TABLE No. 1. *Continued.*

No.	*Name and Age.*	*Cause.*	*Pupils.*	*Ophthalmoscopic appearance.*	*Color perception.*	*Visual field.*	*Visual acuity.*	*Treatment.*	*Time of observation.*	*Result.*	*One Eye.*	*Both Eyes*	*Remarks.*
19	W. W. F. 29.	Alcohol and tobacco.	Mydriasis both.	R. whitish, L. reddish; arteries and veins thin in both.		Concentrically limited, and central scotoma, both.	R. $^{10}/_{200}$ L. $^{20}/_{200}$	Pot. iod., strychn., subcut. const.current; sublimate,abstinence; nitrite of amyl.	4 months.	R. $^{20}/_{200}$ L. $^{20}/_{100}$		1	
20	Miss J. A. 55.	Central lesion; (apoplexy.)		L. detachment of of lower half of retina; ant. cortical cataract; post. scleral staphyloma. R., white disc.			R=o L. M$^{1}/_{4}$	Strychn. intern.			1		Had a paralytic stroke 2 years previously; R. got blind soon after.
21	Mrs. A. 52.	Unknown	Mydriasis R.; leucoma L.	R.,lamellar cataract; white disc; small blood vessels.			R. 1-2/$_{200}$	Strychn. intern	2 months.	None.	1		Immature cataract had been removed from L. four years previously; severe inflammation;subsequently some kind of operation had been performed; total leucoma.
22	J. Z. 28.	Alcohol and tobacco.		Reddish discs.			$^{20}/_{50}$ Both.	Abstin. strychnia intern.				1	Seen once only.
23	G. R. 44.	Insolation		Whitish discs; small arteries		Restricted inwards	R. $^{20}/_{70}$	Strychnia intern.		R. $^{20}/_{30}$		1	Came on suddenly after one day's

						and downward, both.	L. 20/50			L. 20/20			target practice in hot sun. Result stated by physician into whose hands the case came for further observation.
24	J. E. 56.	Unknown		Whitish discs; small arteries. L. beginning cataract.		Concentrically restricted; both central scotoma.	R. 20/70 L. 20/200	Strychn. subcut; Potass. iod.	1 month.	R. 20/30 L. none.		1	Does neither drink nor smoke.
25	T. B. 45.	Probably syphilis.	L. circular synechia	L. disc pale; small arteries.		Constricted in all directions, especially on nasal side.	L. 20/70		Seen in consultation.		1		+T but no excavation. Iridectomy and strychnia advised.
26	Mrs. R. 53.	Injury.		Discs pale; blood-vessels thin.	Red-green blind.		R. 12/200 L. 20/70 ?	Strychnia subcut.	Seen in consultation.			1	Was run over by a carriage, the wheels going over the head.
27	W. H. McN. 31.	Injury. Alcohol and tobacco.		Discs whitish; arteries very small.	Impaired.		R. 20/50 L. 20/70	Abstin.; strychnia intern.	1 year.	None.		1	Was thrown out of an ice-boat and remained unconscious for several hours.
28	J. S. 45.	Alcohol.		Pale discs; blood-vessels thread-like.		Restricted inwards and downwards in both.	R. 8/200 L 10/200	Potass. iod.; strychnia intern. abstinence.	2 months.	20/50 Both.		1	Improved from the day strychnia was used. Has never used tobacco.

TABLE No. 1. *Continued.*

No.	*Name and Age.*	*Cause.*	*Pupils.*	*Ophthalmoscopic Appearance.*	*Color perception.*	*Visual field*	*Visual acuity.*	*Treatment.*	*Time of observation.*	*Result.*	*One Eye.*	*Both Eyes*	*Remarks.*
29	H. M. 31.	Pressure from tumor of lachrymal gland; L.	L. acts sluggishly; medium wide.	Disc pale L.; arteries small; veins tortuous.		Concentrically limited L.	20/200	Removal of tumor.	3 months.	Field of vision nearly normal. Sight not improved.	1		Adenoma of lachrymal gland.
30	Mrs. B.H. 39.	Syphilis.		Total atrophy of L. Disc. Detachment of retina R.				Potass. iod.	Seen in consultation		1		
31	Dr. J. V. 42.	Alcohol and tobacco.		R. disc especially pale in outer half, grayish exudation around it; veins and arteries small. L. blood vessels very thin.		Restricted downwa's and inwar's; central scotomata.	R. 20/200 L. 20/100	Abstinence strychn. subcut.	6 months.	None.		1	Did not change his habits.
32	G. T. C. 45.	Alcohol and tobacco.					Stated as almost blind when entering the Hospital	Strychn subcut.	4 weeks.	R. 20/200 L. 20/100		1	Seen at hospital; abstinence enforced.

33	J. C. 68.	Central lesion; (softening of brain).	Unequal in size.	L., Disc pale; blood vessels small; periphery bloodless. R., post. scleral staphyloma all around disc; disc pale; blood-vessels thread-like.	Impaired.				Seen in consultation.			1	Removed to insane asylum 2 days after examination for acute mania.
34	H. C. 49	Unknown		Both discs pale; arteries especially thin.			$\frac{20}{50}$ Both.	Strychn. subcut.	1 month.	R. $\frac{20}{30}$ L. $\frac{20}{20}$		1	
35	F. McK. 32.	Tobacco.		Discs whitish; blood vessels, thin, especially R.		R. contracted inwards and downwards. L. normal.	R. $\frac{20}{200}$ L. $\frac{20}{20}$?	Strychnia intern. abstinence.	2 weeks.	R. $\frac{20}{100}$ L. $\frac{20}{20}$		1	Never drinks.
36	P. B. 31.	Doubtful.		Discs white; blood vessels small.	Red-green blind.	Concentrically limited, especially in R.	$\frac{18}{200}$ Both.	Strychn. intern.	Seen only once.			1	
37	Mrs. J. B. 42.	Probably syphilis.	R. larger than L.	R. disc very pale; main arterial branches barely visible. L. small arteries; upper portion of disc especially pale.		R. contracted to point of fixation. L. normal.	R. L. $\frac{\frac{1}{\infty}}{20}$?	Strychn. subcut. and pot. iod. at the same time internally.	3 weeks.	None.		1	R. had been blind for several days 2 years previously. Is said to have become blind again suddenly while patient milked a cow.

TABLE NO. 1 *Continued.*

No.	*Name and Age.*	*Cause.*	*Pupils.*	*Ophthalmoscopic appearance.*	*Color perception.*	*Visual field.*	*Visual acuity.*	*Treatment.*	*Time of observation.*	*Result.*	*One Eye.*	*Both Eyes*	*Remarks.*
38	W. Y. P 65.	Neuritis optica e causa ignota.		Discs whitish; arteries and veins rather tortuous both. In L. distinct signs of former neuritis optica and floating opacities.	Impaired.		R. $^{20}/_{70}$ L. $^{20}/_{100}$	Strychnia intern; pot. iod. later on.	2 months.	R. $^{20}/_{40}$? L. unchanged.		1	Urine and heart normal.
39	C. S. 58	Alcohol and tobacco.		Discs reddish; arteries small; veins broad.		R. scotoma.	$^{20}/_{200}$ Both	Abstinence; strychnia intern.	Seen once only			1	
40	B. S. D. 56.	Injury.		L. disc white; arteries threadlike veins broad.			V. L=0		Seen once only.		1		L. temple was struck by a log; patient fell down insensible and was sick for 2 weeks after; when coming to found L. to be blind.
41	R. S. 52.	Alcohol and tobacco.		Whitish discs; small arteries.	Red-green blind.		R. $^{20}/_{70}$ L. $^{20}/_{100}$	Abstinence advised.	Seen once only.			1	Did not consent to abstain; refused treatment.
42	T. R. 33.	Alcohol and tobacco.		L. whitish disc; small bloodvessels.	Red-green blind L.	L. central scotoma.	R. $^{20}/_{50}$ L. $^{20}/_{100}$	Abstinence; pot. iod.	Seen once only			1	Refused treatment.

43	Miss G. 15.	Cong'nit'l syphilis.		L. disc perfectly white.			0	Strychnia and ferrum intern.	Seen once only.		1		Very considerably emaciated.
44	E B. S. 56.	Alcohol and tobacco		Discs pale; arteries thin.			R. 15/200 L. 14/200	Abstinence; strychnia intern.	Seen once only.			1	Refused treatment.
45	J. M. K. 21.	Injury to L.; R. sympathetic. (?)	L. irregular; iridodialysis.	L., dislocation of lens, beginning cataract; pigmentation of retina, atrophy and pigmentation of disc. R. disc pale, in outer quadrant white; arteries very thin; veins partially broader than normal.	Red-green blind R.		R. 20/50	Strychnia subcut.	3 weeks.	R. 20/30		1	L. received an injury 13 years previously.
46	Mrs. J. B. 42.	Probably syphilis.		L. arteries small; disc whitish.			L. 20/50	Strychnia subcut.	2 weeks.	L. 20/30	1		
47	F. H. T. 44.	Alcohol.		Both discs white; blood vessels very thin.	Green-blind		20/40 ? Both.	Abstinence strychnia intern.				1	Two years previously had reddish discs and hyperæmia of retina; never used tobacco.
48	Mrs. S. C. H. 32.	Cholera Asiatica	R. mydriasis.	R. disc white. L. atrophic spots in choroid; iritis.			R=0		Seen in consultation.		1		R. got blind after attack of cholera 18 yrs. previously.

TABLE No. 1. *Continued*

No.	*Name and Age.*	*Cause.*	*Pupils.*	*Ophthalmoscopic appearance.*	*Color perception.*	*Visual field.*	*Visual acuity.*	*Treatment.*	*Time of observation.*	*Result.*	*One Eye.*	*Both Eyes*	*Remarks.*
49	S. W. 49.	Central lesion (multiple sclerosis).	Myosis both.	Whitish discs; small bloodvessels.			$^{20}/_{100}$? Both.		Seen in consultation.			1	Died soon after of his central lesion.
50	J. C. W. 7.	Unknown		Discs very pale; some pigmentation around them; arteries and veins very thin; no pigment visible in choroid and epithelial layer; nystagmus.		Attempts at peripheral fixation.	$\frac{1}{\infty}$ Both	Pot. iod.	1 month.	None.		1	Father and mother were first cousins. Patient said to have lost vision only within last year after having suffered from erysipelas and balanitis.
51	L. R. 7.	Central lesion (cerebro-spinal meningitis.	Mydriasis	White discs.			V=0		Seen in consultation.			1	
52	L. W. 41.	Alcohol and tobacco.		Whitish discs; small arteries.			R. $^{18}/_{200}$ L. $^{8}/_{200}$	Strychnia intern; abstinence; pot. iod. sublimate.	7 months	R. $^{20}/_{30}$ L. $^{8}/_{200}$		1	Saloon-keepor.
53	A. B. 32	Alcohol and tobacco.		Discs pale; bloodvessels small.		Central scotoma both	R. $^{20}/_{30}$ L. $^{20}/_{50}$	Strychnia intern.	Seen once only.			1	Saloon-keeper; refused abstinence.

54	G. S. 48.	Central lesion. (tabes dorsalis) Was a hard drinker formerly	Myosis both.	Discs pale; arteries small.		Concentrically limited, both.	R. 20/30 L. 20/20 ?		Seen in consultation.			1	
55	V. K. 42.	Insolation also hard smoker.		Whitish discs.			R. 15/200 L. 3/200	Potass. bromid. and strychn. intern.	2 weeks.	R. 20/200 L. 6/200		1	Vision was impaired immediately after the sunstroke.
56	F. S. 46.	Alcohol and tobacco.		Whitish discs.	Red blind.	Central scotoma, both.	20/200 Both.	Abstinence; strychnia intern.	Seen in consultation.			1	R. temple had been injured by a fall.
57	Mrs. A. S. 30.	Probably cosmetics.		Discs pale; arteries and veins small.			20/30 ? Both.	Strychnia and iron; Potass iod.	6 weeks.	20/20 Both.		1	Improved when having discontinued cosmetics for several weeks.
58	D. A. W. 72.	Old age.		White discs; small bloodvessels.			R. 1/∞ L. 20/200	Stimulants; strychnia intern.	2 years.	Blindness.		1	Otherwise apparently healthy.
59	T. B. 53.	Alcohol and tobacco.		Pale discs.		Central scotomata.	20/40 Both.	Abstinence; strychnia intern.	Seen once only.			1	

TABLE No. 1. *Continued.*

No.	*Name and Age.*	*Cause*	*Pupils.*	*Ophthalmoscopic appearance.*	*Color perception.*	*Visual field.*	*Visual acuity*	*Treatment.*	*Time of observation.*	*Result.*	*One Eye.*	*Both Eyes*	*Remarks.*
60	Miss E S 15.	Doubtful.	Mydriasis both.	Discs reddish; retinal vessels very thin.	None.		$\frac{1}{60}$ Both.	Strychnia intern.; potiod.; warm sitz baths.	2 months.			1	Said to have always been "shortsighted;" blindness came on L. six months ago, R. since. Menses have been suppressed by some unknown cause.
61	Miss M.F. 16.	General anæmia.		L. disc pale; arteries and veins small.			L. $^{3}/_{200}$	Strychnia subcut.	3 weeks.	L. $^{20}/_{200}$	1		Was operated upon for convergent strabismus three years previously, L. was then already amblyopic. (V=$^{20}/_{200}$.)
62	H H. K 58.	Alcohol and tobacco.		Pale discs.	Impaired.		R. $^{12}/_{200}$ L. $^{18}/_{200}$	Abstinence; strychnia intern.	Seen once only.			1	
63	Dr. H. 79.	Old age (formerly heavy drinker.)	Sluggish.	L., white disc.			L. $^{20}/_{100}$	Strychnia intern and stimul'nts	Off and on for six months.	Increasing failure.	1		R. operated upon for inflammatory glaucoma 2 years previously. Later on paralysis of oculomotor nerve.
64	J. W 34.	Unknown	L., myd-riasis.	R., whitish disc. L., white disc.	Red-green blind.		R. $^{20}/_{200}$ L. $\frac{1}{60}$	Strychnia subcut.; constant	3 months.	Increasing failure.		1	

									current pot. iod. sublimate					
65	A. R. 30.	Injury.		L. disc white.		Concentrically limited.	L. 20/200	Strychnia intern.	2 months.	None.	1		Fell down an elevator shaft and received fracture of frontis; considerable hæmorrhage into orbit.
66	P. L. 38.	Alcohol and tobacco.		Pale discs.			R. 20/50 L. 20/100	Strychnia intern; abstinence.	2 months.	R. 20/40 L. 20/70		1	
67	N. W. 18.	Central lesion (epilepsy).	Middle wide inactive.	Discs pale; blood-vessels thin, especially L.			R. 20/50 L.=0.	Strychnia intern.	Seen in consultation.			1	L. got blind 4 months ago.
68	S. L. H. 63.	Alcohol and tobacco.		Discs pale; arteries very small.			R. 20/100 L. 20/70	Abstinence; strychnia intern.	Seen in consultation.			1	Continues his bad habits.
69	C. S. 37	Alcohol and tobacco		Post. scleral staphyloma. L. disc pale; arteries thin.		Central scotoma R.	R. 20/50 L. 8/200	Abstinence advised.	Seen once only.			1	Saloon-keeper. L. suddenly got almost blind after a drinking debauch.
70	Mrs. D. R. 49.	Unknown		Outer half of discs very white; arteries thin; veins broader than normal.			R. 20/50 L. 20/40		Seen once only.			1	Refuses treatment.

THE TREATMENT OF DETACHMENT OF THE RETINA WITHOUT OPERATION, WITH A CASE.

BY FRANK B. EATON, M. D.,

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Undoubtedly the varieties of puncture-operations for detached retina, now advocated by a few ophthalmologists of reputation, are not popular with the mass of surgeons in any land. A calm review of the writings published on the subject during the past ten years, and of the discussions in some of the ophthalmological societies, will convince any one that this is the fact; and the conclusion arrived at, instead of intimidating the oculist should lead him to seek new lines of clinical investigation and treatment. In 1882, Professor C. Schweigger published a paper entitled, "Observations on Detachment of the Retina,"* in which, while he did not advocate the abandonment of puncture, he laid particular stress upon diaphoretic after-treatment, and summed up his general plan of treatment thus:

"Provided, the retina be not perforated spontaneously, I consider early puncture, in connection with a regular diaphoretic treatment the most rational course, and the chances the greater the smaller the detachment. For several years I have preferred, for the diaphoretic treatment, sodium salicylate to pilocarpine, which produces many unpleasant symptoms. I give 2.00 grams in 0.5 doses [7½ grains] every ten minutes, and have the patient wrapped in woollen blankets; the diaphoresis to be continued for several hours, during which the patient may take weak tea."†

It is unnecessary to state that the great majority of cases of detachment apply for treatment, when early puncture is out of

* Archives of Ophthalmology, Vol. XI. p. 451. † Ibidp. 453.

the question, and I freely confess that I have had no experience with it as a means of treatment.

But so marked and rapid an improvement did I accomplish in a case of marked detachment with copious subretinal effusion by vigorous diaphoresis alone, that the question arose in my mind, as to whether this form of treatment in properly selected cases had been fairly tried. In the case I here give, it will be noticed that I departed somewhat from Schweigger's plan, and brought

L.

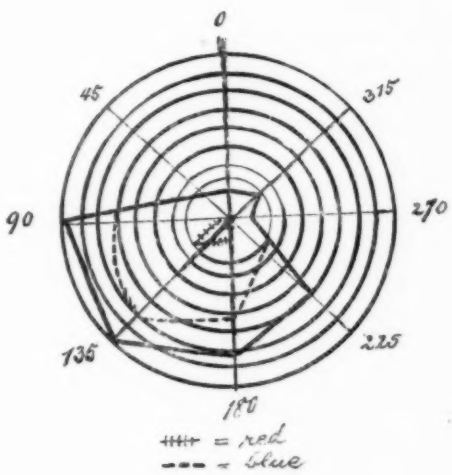

Fig. 15.

Field V. L. E., April 7, 1886. (Eccentric fixation, upward and inward.)

into requisition *with* sodium salicylate the Turkish bath. The case is as follows:

Robert R., æt 14. was brought to me by his mother, April 8th, 1886. Four years ago he was kicked over the right eye by a horse, and has been blind in that eye ever since. Two years ago he was hit in the left eye with a snow-ball which blinded him at once, and he had to be carried home. The left eye-ball was very red, and much swollen, as were the surrounding parts.

For some time he was almost blind, but the day after the accident, he could see a little out of the left eye, and in a short time as well as ever. One year ago the sight of the left eye began to fail, and in two weeks the sight was as bad as now.

A doctor treated him until lately with a battery, and he can see a little better.

Status Praesens. — Traumatic cataract R. — V. R. E. shadows. External strabismus R. — V. L. E. fingers at six feet. Eccentric vision (upward and inward). Ophthalmoscope shows detachment of retina of nearly the whole of the lower half of

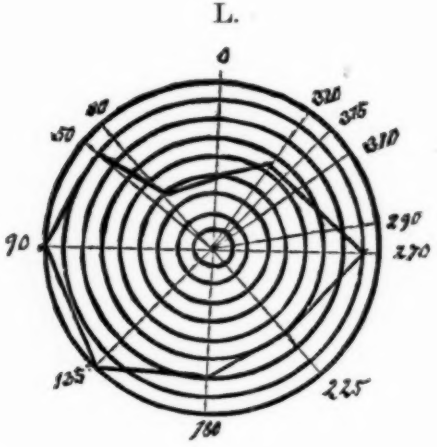

Fig. 16.

(Eccentric fixation; upward and inward.)

the retina, (lower and outer quadrant). Central arterial branches smaller than normal.

The detachment extends to the edge of the disc downward and outward.

The field of vision of the left eye [Fig. 15.], shows not only contraction corresponding to the detachment, but also that of colors.

I resolved to make a thorough trial of free diaphoresis before

undertaking any operation. This was carried out systematically and faithfully, the Turkish bath alternating daily with pilocarpine $\frac{1}{4}$ gr. After ten days, however, I gave the boy powders of sodium salicylate 5 grs. each, three to be taken ten minutes apart [15 grains] during the bath.

April 17th, fingers at 16 feet.

April 21st, field L. as in Fig. 16.

The fundus looks much better, the outlines of the disc being clearer, and the arteries fuller. Considerable fluid is still to be seen at the lower periphery, however. I now began the use of strychnia injections.

April 26th V. L. $\frac{1^3}{L}$; field V., same as on the 21st.

May 1st, V. L. $\frac{1^3}{L}$; fundus shows marked diminution of the sub-retinal fluid.

Field has extended outward and upward.

He now left for home with instructions to carry out the treatment by means of an artificial Turkish bath apparatus and the powders. I also instructed his mother to apply a pressure bandage at night.

So confident am I that a thorough diaphoretic course, carried out under the surgeon's eye, has everything to recommend it as a rational means of treatment, that I shall not hesitate to try it even in desperate cases, with or without puncture.

ON A MODE OF DETERMINING, WITH THE PRISOPTOMETER, THE DEGREE OF LATENT HYPERMETROPIA WITHOUT MYDRIATICS.

BY H. CULBERTSON, M. D.
Assistant Surgeon U. S. Army.
(Retired).

The prisoptometer has been described heretofore. It exercises no influence on the refraction.

To determine the latent hyperopia, place in the holder of the prisoptometer a glass of + 7. dioptries, and add over it the concave spheric, which will cause the inner margins of the object circles of this instrument to touch. The degree of hypermetropia will be the difference between the positive and negative glass.

In testing this matter, I have called upon a number of my hyperopic patients, in whom I have, within a year, and in one case two years, tested the eyes under duboisine, and hence I know the degree of latent hyperopia in each case. These parties I have subjected to the above method of testing with glasses, and find that in the main the ametropia developed by the glasses corresponds with that found by the employment of the mydriatic.

To illustrate this subject, take the most simple case of hypermetropia, one in which the use of the prisoptometer shows no manifest ametropia. On placing + D 7. in the holder of the instrument, we render the eye artificially myopic = 7. dioptries, and we overcome all accomodation, certainly for the distance of the eye from the object circles, which in my instrument is four meters. We now place successively before the convex 7. D spheric, negative "d," see Fig. 17., or concave spheric—D 4. or — D — 5., and finally D 6. and with the latter the circles are rendered tangent at their inner edges. Taking the difference we have + D 7.0 — (— D 6.0) = 1.0, or 1 dioptric of latent hyperopia.

But this needs explanation and the following Figure 17 will aid in understanding the result.

The parallel rays passing through the + D 7.0 glass alone, induces an artificial focus, "at — D 7.0," and also 7. dioptries of myopia. We now add D, see Fig. 1, or — 6. D and this glass induces an artificial hyperopia, and neutralizes D 6. of the artificial myopia, and the focus is cast in the direction of the dotted

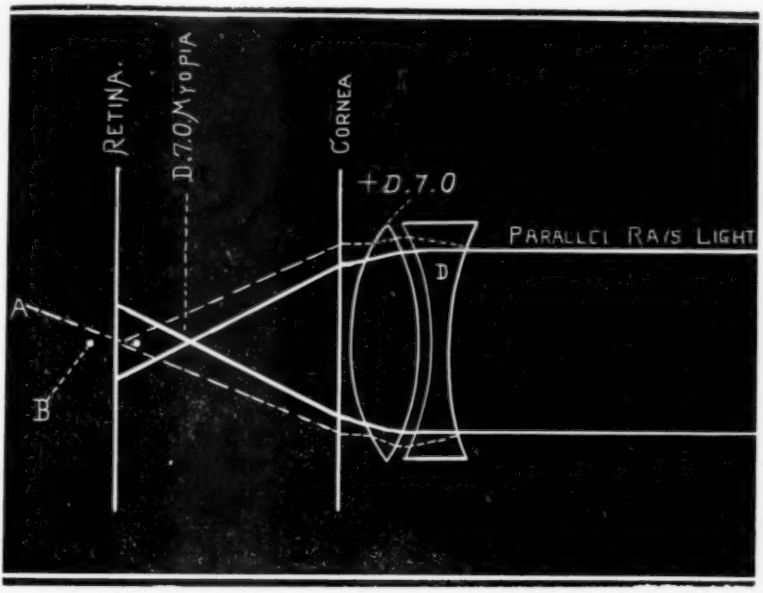

FIG. 17.

lines upon the retina, and now the two circles of the prisoptometer are tangent. But the + 7. cannot overcome the — 6., hence, there must be an influence = — D 1.0 to neutralize the + 7. Remembering, that this + 7. induces myopia=7. D and the— 6. hypermetropia, = D 6.0, and considering the eye as a glass of + 1. D, it is plain that said eye furnishes the + 1.0 of real hyperopia. Hence, — D 7.0 — [(+ D 6. 0 + D 1.0) = + D 7. 0] = 0; or the focus is upon the retina, the object circles are tangent, and there is present in this example = D 1.0 of latent hypermetropia.

Therefore, the following rule is obtained for the first class, or when there is no manifest hypermetropia.

RULE I.—Place in the prisoptometer + D 7. spheric, and add the — spheric which will cause the object circles to touch, and this will denote the latent hypermetropia.

N. B. Weak convex or concave spherics should be tried when *the apparently appropriate negative glass* has been found, to see if *these* cause separation or lapping of the circles; and this caution should be observed in all the testing by this method for hypermetropia.

Case second—in which there is spasmodic or apparent myopia, and yet hypermetropia is present. Suppose such a case = — D 0. 5. Here the ametropic focus, from accommodation, is at A Fig.I . Add now the + 7. D. in the instrument, and there will be induced not D 7. artificial myopia, but the sum of this and the spasmodic myopia; or — D 7.0 + (— D 0.5) = — D 7.5. By successive trials of negative spherics, we find that — D 6.5. causes the object circles to touch. Hence (myopia) + 7.5.— (hypermetropia) (— 6.5) = + D 1.0. The latter quantity is hypermetropia, because the eye furnishes + D 1.0 of absolute hypermetropia, and hence — D 7.0 + (— D 0.5 spasmodic) = — D 7.5 — [(+ D 6.5 + D 1.0) = + D 7.5] = 0; or the object circles are tangent and the images in focus upon the retina. Therefore, if on testing with the prisoptometer we find apparent myopia, we observe the following:

RULE II.—Place the + D 7.0 spheric glass in the holder and add different concave spherics until the circles touch, then add to the number of dioptries of manifest myopia previously found, (= D 0.5 in the last case) to the + D 7.0 spheric, and from this sum deduct the number of dioptries of the negative spheric required to cause the object circles to touch.

Case third—in which there is manifest hyperopia, as well as latent. Let us suppose a case in which on using the instrument the object circles are apart and the focus at B Fig. 1, and that a + D 0.5 causes the said disks to touch. There is = D 0.5 of

manifest hypermetropia. Place + D 7.0 in the holder of the instrument, and we have not D 7.0 of artificial myopia but that quantity — the + D 0.5, or — 7.0 — (+ 0.5) = — D 6.5 of artificial myopia. Add now — D 6.0 spheric in instrument and the circles touch at their edges and their images, will be in focus upon the retina. Hence, we have under these glasses (myopia) + 6.5 — (— 6.0) = + 0.5 dioptries. But we have found that there is D 0.5 of MANIFEST hyperopia, hence this must be added to the + D 0.5 latent H., or + D 0.5 + D 0.5 = + D 1.0 of total hyperopia. However, this may be simplified by the following.

RULE III.—Place + D 7. in the holder, add the — spheric which causes the circles to touch and deduct the second glass from the first, which will give the total hypermetropia. To find the latent, deduct the manifest from the total hypermetropia. Practically we can deduce two rules from the three given:

First. In case there is no manifest hyperopia and when there is manifest hypermetropia, we deduct the negative glass from the positive, for the total hypermetropia.

Second. In case there is spasmodic myopia associated with latent hypermetropia, add the apparent myopia to the + glass and deduct from this sum the negative glass, required to cause the object circles to touch.

Appended is a table of cases representing these three classes of hyperopia. In some examples the results do not correspond with those shown under the mydriatic; but this I believe is due to the refraction having changed since their application. I am satisfied that if the two tests were applied at the same date, the results would be almost identical in the degree of ametropia.

CASES UNDER RULE I.

NO. EYE.

Mr. W. T. L., æt. 32. No manifest ametropia. Under duboisine has + D. 1. 0 H.

1. R. E. with + 7.— (—6.) tang = + D 1. 0 H.
2. L. E. with + 7. —(—6.) tang = + D 1. 0 H.

No. Eye.

3. Miss Z. D., æt. 16. No. man. am. in R. E. Duboisine. + D 1.0 H. With + D 7.—(—6.) = + D 1. H.
   Miss T. M., æt. 20. No manifest am. R. or L. eye. Duboisine. + D 0.75 H.
4. R. E. with + D 7.75—(—D 7.0) = + .75 D.
5. L. E. with + D 7.75—(—D 7.0)= + .75. D.
   Miss McC., æt. 13. No manifest ametropia.
6. R. E. + 7. — (— 6.) = + D 1. H. Duboisine same.
7. L. E. + 7. — (— 6.) = + D 1. H. Duboisine same.
   Miss E. G. R., æt. 45. No manifest ametropia.
8. R. E. + 7. — (—6.25) = D 0.75 H. Duboisine same.
9. L. E. + 7. — (—6.5) = D 0.5 H. Duboisine gives D 0.75 H.

CASES UNDER RULE II,

SHOWING SPASMODIC MYOPIA.

No. Eye.

J. H. C., æt. 30. Each eye man.—D.5. Duboisine H D 1.

1. R. E. + 7 + (—.5) = + 7.5— (—6.5) = + D 1.0 H.
2. L. E. + 7 + (—.5) = + 7.5— (—6.5) = + D 1.0 H.
   Mrs. M. R. B., æt. 32. Man. —D 0.5 each eye. Duboisine + 1.25 H.
3. R. E. + 7. + (—.5) = + 7.5 — (—6.25) = + 1.25 H.
4. L. E. + 7. + (—.5) = + 7.5 — (—6.25) = + 1.25 H.
   Mrs. R. B., æt. 42. Manifest — D .25 each eye. Duboisine + D 0.75 H.
5. R. E. + D 7. + (—.25) = + 7.25—(—6.75) = + 0.5 H, lacks +.25 D.
6. L. E. + D 7. + (—.25) = + 7.25 — (—6.75) = + 0.5 H, lacks + .25 D.
   Mrs. C. F. H., æt. 28. Manifest — D 0.5 each eye. Duboisine + D 1. H.
7. R. E. + 7. + (—.5) = + 7.5 — (— 6.5) = + 1.0 H.
8. L. E. + 7. + (—.5) = + 7.5 - - (— 6.5) = + 1.0 H.
9. Mr. C. B. C., æt. 23. Manifest—D 0.25. L. eye. + 7. + (— .25) = + 7.25 — (—6.5) = + D 0.75 H. Duboisine gives the same.
   Mrs. E. G. R. Each eye manifest. —D 0.25. æt. 45. Duboisine gives + D 0.75.

No. Eye.

10. R. E. + 7. + (—.25) = + 7. 25 —(—6.5) = + D. H 0.75.
11. L. E. + 7. + (—.25) = + 7.25 —(—6.5) = + D. H. 0.75.

CASES UNDER RULE III.

IN WHICH THERE IS MANIFEST AS WELL AS LATENT H.

No. Eye.

Mr. H. C., æt. 58. Man. H. 1.5 D. Duboisine not used.

1. R. E. + 7. — (—5.5) = + 1.5 D. H.
2. L. E. + 7. — (— 5.5) = + D 1.5. H.

Miss H. A., æt. 19. Man. H. D 0.75 each eye.

3. R. E. + 7. — (—4.25) = + 2.75 H. 2 yrs. ago, Duboisine gave D 3.0 H.
4. L. E. + 7. — (—4.25) = + 2.75 H. 2 yrs. ago, Duboisine gave D 3.5 H. Probably the refraction in eyes have changed in two years.

Miss Z. D., æt. 16. Manifest + D. 0.25 H.

5. L. E. + 7. —(—6.) = +D. 1.0 H. Has under duboisine + D 1. H.

Miss K., æt. 47. Right E. man. + D. 1.25; L. man. + D 2.0.

6. R. E. + 7.—(—5.0) = + 2.0 H. Duboisine gives + 2.H.
7. L. E. + 7.—(—4.5) = + 2.5 H. Duboisine gives +2.5 H.

Mr. C. M. V., æt. 42. Man. H. D .25 each eye.

8 & 9. R. & L. E. each + 7.75 —(—7) = + .75 D. H. No duboisine used, and sees well in R vision with these glasses.

Miss A. V., æt. 41. + .5 H. man. each eye.

10. R. E. + 7. —(—6) = + D 1.0 H. Duboisine, 1 year ago, gave + D 1.5 H.
11. L. E. + 7. —(—.6) = + D. 1.0 H. Duboisine, 1 year ago gave + D 1.5 H.

Mrs. T., æt. 40. + D 1.25 H man. each eye.

No. Eye.

12. R. E. + 7.—(—4.5) =H 2.5 D. Duboisine gives the same.
13. L. E. + 7.—(—4.5) = + H 2.5 D. Duboisine gives the same.

    Mrs. LeR. C. Man. H. R. E., + D 1.5. L. E. man. + D 4.5 H.

14. R. E. + 7.—(—4.0)= + 3.0 H. January, '86 duboisine gave + D 4 H. There must have been some change in the refraction of this eye.
15. L. E. + 7.—(—2.) = + 5. D H. In January, '86, Duboisine gave + D 5. H.

Attention is invited to what has already been stated as to the influence of the glasses, in determining the hyperopia; the + inducing artificial myopia, and the —, artificial hyperopia. To illustrate, take eye, 3, under Rule II; or R. E. + 7. + (—.5) = + 7.5 — (—6.25) = + 1.25 H. This formula, according to the effect of the glasses, is as follows: R. E.—7. + (—.5 result of accommodation) = — 7.5 — (+6.5 artificial hyperopia from—glass) = —1.25 D. H. The latter quantity neutralizes the H.= D 1.25 of the eye. In applying the negative glasses behind the + 7. D spheric, each negative should be removed before a second — is applied; *i. e.*, suppose — 6. is behind the + 7. and the circles are not touching; it will not answer to add to the — 6. the — D 5., but the — 6. should be removed from the holder, and then the — 6. and the — 5. added simultaneously; because, then, the + 7. being in the instrument and overcoming the accommodation, the application of the two negative glasses will give the true refraction. If, however, negative 6. is permitted to remain in the holder, there would only be + 7. — (— 6.) = D 1. of accommodation to be overcome by the — D 0. 5 subsequently added, and which force the ciliary muscle might exercise and so vitiate the result.

REMOVAL OF A PIECE OF STEEL FROM THE CRYSTALLINE LENS.

BY DAVID WEBSTER, M. D.,

Professor of Ophthalmology in the New York Polyclinic, Surgeon to the Manhattan Eye and Ear Hospital, New York.

Mr. M., a blacksmith, aged 51, living in the interior of New York State, on January, 28, 1886, while striking a cold chisel with a hammer had a piece of steel from the edge of the chisel fly up and strike his left eye. Immediately after the injury he observed that the sight of the eye "flickered" but he could still see very well with it, and there was very little pain. He went at once to see the nearest physician who examined the eye and could find nothing in it. He went to see the doctor again the next morning on account of the pain in the eye, and upon examining the eye again the doctor found, that there was a foreign body in it but said it was too deep for him to attempt its removal, and advised him to go to see Dr. C. R. Agnew. On Tuesday, February 2, five days after the injury, the patient presented himself at Dr. Agnew's clinic at the College of Physicians and Surgeons. Upon inspection Dr. Agnew found a minute scar of the cornea just below and a little to the temporal side of its centre and what seemed to be a foreign body, enveloped in lymph, transfixing the iris near its temporal pupillary border and penetrating the lens a little to the temporal side of its centre. The anterior extremity of the foreign body projected, apparently, about a line into the anterior chamber. Atropine was dropped into the eye, and while the rest of the pupil dilated moderately well, the pupillary border at the site of the foreign body remained fixed.

Dr. Agnew advised that an attempt be made to remove the piece of steel, and sent the patient to the Manhattan Eye and

Ear Hospital for that purpose. The next day, Wednesday, Dr. Agnew, being called away on business, requested me to operate in his stead. As the foreign body was believed to be steel it was thought that the magnet might be fonnd necessary during the operation. Accordingly we had a Gruening's magnet and a Hirschberg's electro-magnet on hand. Before the patient was under ether I held the Gruening's magnet close to the cornea, immediately over the foreign body for several minutes without causing it to move and without causing any sensation in the eye as though traction upon the piece of steel were being produced. Upon testing the strength of the two magnets Gruening's was found to be quite as strong as Hirschberg's, owing, I presume, to some defect in the electric current. The patient having been etherized I made an incision in the temporal margin of the cornea nearest the foreign body with an iridectomy knife, and as the point of the knife reached the foreign body before the wound was large enough, I enlarged it with scissors.

The extremity of the Gruening's magnet being too large to introduce into the anterior chamber through so small a wound without doing more violence to the eye, and as the experiment which I had made with it caused me to doubt whether it would attract the steel with sufficient power to remove it if I did introduce it, I decided to attempt to remove it with forceps. Accordingly, I carefully introduced a pair of iris forceps, curved on the flat, and seized the encapsulated foreign body and as gently as possible withdrew it. So firmly was the foreign body attached to the iris and lens by the lymph in which it was encapsulated, that I had to use conscious force in extracting it. A portion of the iris came out with it. Instead of replacing this inflamed portion of iris within the eye, I thought it the part of prudence to excise it which I did with scissors, leaving a neat coloboma with no iris in the wound. The encapsulated foreign body was placed upon the finger of one of the surgeon's present, and the power of the Gruening's magnet tried upon it. This magnet, which readily lifted a pocket-knife, or a pair of strabismus scissors, would not raise the foreign body from the finger even placed in immediate contact with it. This rendered it certain that an introduction of the magnet into the anterior chamber of the eye would have been

worse than useless. After the mass of lymph enclosing the foreign body had become dry and was loosened up from the finger, the magnet raised it readily.

The eye recovered without unpleasant inflammatory reaction. The wound healed without anterior synechia. On February 17, fourteen days after the operation, the patient was discharged with vision $\frac{20}{CC}$ in the eye from which the spicula of steel had been removed, but with a blood stain covering the anterior capsule of the lens in the area of the coloboma. The eye was rapidly "whitening up." The foreign body was a very slender spiculum of steel some two and a half lines in length.

AN ACUTE ATTACK OF GLAUCOMA INDUCED BY THE LOCAL APPLICATION OF COCAINE.

BY JULIAN J. CHISOLM, M. D., BALTIMORE, MD.

Mr. C. G. E., aged 48, was operated upon for glaucoma fifteen months since. Vision had commenced to fail in the left eye with sharply bent vessels. V. = $\frac{15}{LXX}$. In the right eye he still retained good vision $\frac{15}{XV}$, with deep physiological pitting of the disc and bending of vessels at one part of the rim. From the double iridectomy he recovered promptly, and, by aid of reading glasses, has been doing well. Recently, he consulted me in reference to his glasses, which were not as clear as formerly and needed changing. There was myopic astigmatism $\frac{1}{72}$ — c to which was added presbyopia $\frac{1}{30}$ +. With these glasses he read Brilliant, and with the cylinder alone he exhibited V. $=\frac{15}{XV}$ showing perfect vision in the right eye. In this eye there had been for four days some mattering and redness, a catarrhal ophthalmia brought on by exposure in railroad travel. I suggested to him that a 1 per cent solution of nitrate of silver followed up by a zinc sulphate lotion would soon relieve him of the surface inflammation, and that to prevent pain from the caustic drop I would first use cocaine. The cocaine four per cent. drop was applied, and in five minutes the caustic drops. There

was no discomfort from it for the moment, but, in ten minutes, the eye felt very hot and burning, which induced me to reapply the cocaine. This has been my rule of practice in catarrhal ophthalmia, to suppress the pain of caustic collyria by cocaine. As soon as he felt comfortable, he left my office with instructions to go to the hotel and apply cold cloths to the eye if it caused pain. Within three-fourths of an hour he returned to my office with the statement that his eye had become painful and that he could no longer see out of it. In closing the left eye he could not see to count fingers at two feet, with an eye which had $\frac{1}{1}\frac{5}{5}$ vision one hour before. Upon examination. I found the pupil widely dilated and smoky. Tension +. An ophthalmoscopic examination showed no sudden hemorrhage, which I was fearful of. This gave me grounds for alleviating his fears with the statement that an antidote would soon make all right again. He had become sick from fright and felt very faint. I applied a one grain solution of eserine freely to the eye and drew blood from the temple with the artificial leech, also ordered cold cloths as a local dressing. In two hours there was a visible improvement to him, so that he could see again large objects, and, in six hours, sight had entirely returned to the extent of reading brilliant with his glasses and seeing $\frac{1}{1}\frac{5}{5}$ for distance.

This is my first accident from cocaine. How many thousand times I have used it I can not say. For all eye operations, with the exception of enucleations, it is in daily use. I use it to quiet eye pains in all patients, allowing them to apply it as often as they desire. When I apply nitrate of silver solutions for catarrhal ophthalmia, each application of the caustic is preceded and followed by cocaine. If I remove a pterygium the patient is supplied with a cocaine 4 per cent. solution to drop in his eye whenever it pains. One nervous lady who had dropped ammonia into her eye instead of a borax lotion, used the 4 per cent. solution forty times a day for three days, sometimes at ten minutes interval or as often as the burning pain would be experienced, and no trouble came of it, although the cornea had a whitish look from the ammonia application when I first saw her. I had never had occasion to use it in glaucomatous cases, except in preparation for an iridectomy. The emptying of the anterior cham-

ber with escape of acqueous would always remove all traces of the drug from within the eye. This is the first case that I can recall in which I have had occasion to use cocaine for any purpose in an eye that had been previously iridectomized for glaucoma, and, in this case, the disastrous action followed most promptly. In less than an hour, sight had been reduced from reading the finest print to counting fingers at eighteen inches. In this case it would seem that the excessive dilatation of the pupil had, in some way, interfered with the circulation in the canal of Schlemm and had brought about injurious pressure. As soon as the counteracting influences of the eserine could be obtained and a decided diminution of the pupil procured, the products of the temporary congestion disappeared. Notwithstanding the iridectomy, the iris acted promptly from each of these agents. The cocaine caused such a dilatation of the pupil that only a small rim of iris was visible. In time the eserine overcame this and in its turn drew up the pupil until it was nearly hid under the upper lid. It was owing to this fact that the glaucomatous condition was so promptly brought about, and fortunately for the patients, relief, so readily secured. Should this accident have occurred in the hands of a general practitioner, and antidotal remedies not at once applied, the results as to vision must have been most serious.

CORRESPONDENCE.

ADOLF ALT, M. D., Editor AMERICAN JOURNAL OF OPHTHALMOLOGY:

DEAR DOCTOR:—I notice in Vol. III., No. 6 (June) of your JOURNAL that you quote in an article on the "Histology of Trachoma," the method of forcible expulsion of the contents of all follicles, by pressure, in the treatment of that disease, as Dr. Hotz's method. Permit me to claim priority, in so far that in May, 1883, I read a paper before the Medical Society of the State of Pennsylvania, entitled "Some Ophthalmological Observations during ten years' service in Will's Eye Hospital," in which I call attention to this method of treating granular lids,

and describe the same way of doing it, by pressure with the fingers, etc.

This method of treating trachoma I discovered myself, and had been carrying it out, as well as teaching it, for several years with great success both in private and in my clinic, before I wrote and read my paper. See Transactions of the Medical Society of the State of Pennsylvania, for 1883.

As far as I can learn, I am the first to treat trachoma in this way, and to lay the method before the profession in this country.

On June 20, I received my copy of the *Archives of Ophthalmology*, and, noticing Dr. Hotz's paper, I wrote to him at once in relation to this fact, and I ask, in the cause of justice, that you make a notice of this in your journal.

I am, very respectfully,

PETER D. KEYSER.

Philadelphia, July 11, 1886.

EDITORIAL NOTICE.

Dr. Prout's and Dr. D. Webster's papers, published in the July number of this JOURNAL, were read before the American Ophthalmological Society at New London.